Chat GPT
İş Dünyamızı
Nasıl Etkileyecek?

Prof. Dr. Özgür Özlük



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Chat GPT

Generative Pretrained Transformer



Linas Beliūnas
@linas.beliunas

Time it took to reach **1 million users**:

Netflix - 3.5 years
Airbnb - 2.5 years
Facebook - 10 months
Spotify - 5 months
Instagram - 2.5 months
iPhone - 74 days
ChatGPT - 5 days



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100 million

Time it took to reach **1 million users**:

Netflix - 3.5 years

Airbnb - 2.5 years

Facebook - 10 months

Spotify - 5 months

Instagram - 2.5 months 30 months

iPhone - 74 days

ChatGPT - 5 days 60 days

Google Bard



Baidu Ernie

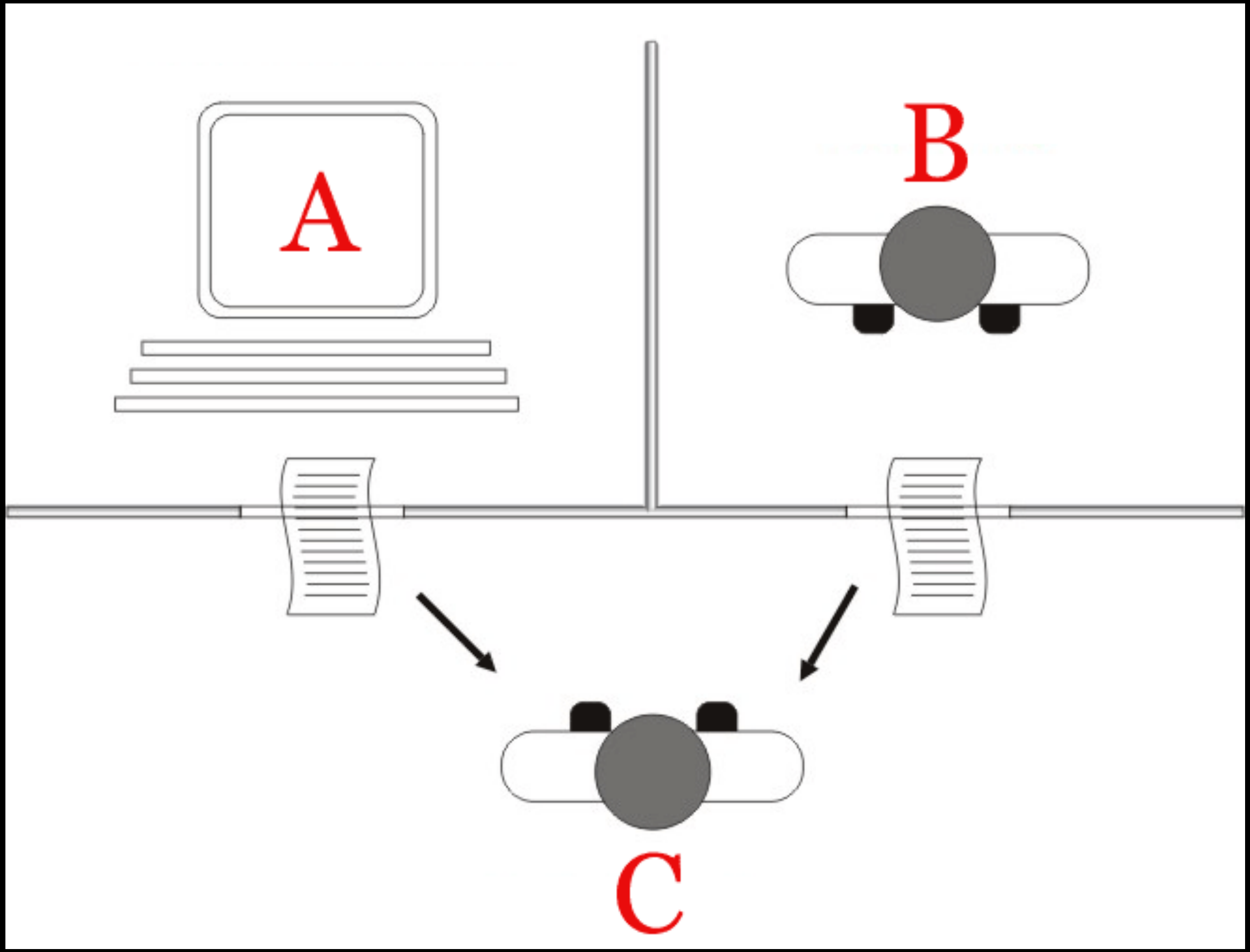


Examples of generative AI models from some of the early providers show there are many options available for each modality, several of which are open source.

Closed source[1] | Closed source, available through APIs[2] | Open source[3]

	Text	Image	Audio or music	3-D	Video	Protein structures or DNA sequences
Microsoft			VALL-E	RODIN Diffusion	GODIVA	MoLeR
OpenAI[4]	GPT-4	DALL-E 2	Jukebox	Point-E		
Meta	LLaMA	Make-a-scene	AudioGen	Builder Bot	Make-a-video	ESMFold
Google/ DeepMind	LaMDA	Imagen	MusicLM	DreamFusion	Imagen Video	AlphaFold2
Stability AI	StableLM	Stable Diffusion 2	Dance Diffusion			LibreFold
Amazon	Lex		DeepComposer			
Apple				GAUDI		
NVIDIA	MT-NLG	Edify		Edify	Edify	MegaMolBART

Kısa Tarihçe: **Turing Testi**



A.I. TIMELINE

1950
TURING TEST
Computer scientist Alan Turing proposes a test for machine intelligence. If a machine can trick humans into thinking it is human, then it has intelligence

1955
A.I. BORN
Term 'artificial intelligence' is coined by computer scientist, John McCarthy to describe "the science and engineering of making intelligent machines"



1961
UNIMATE
First industrial robot, Unimate, goes to work at GM replacing humans on the assembly line



1964
ELIZA
Pioneering chatbot developed by Joseph Weizenbaum at MIT holds conversations with humans



1966
SHAKEY
The 'first electronic person' from Stanford, Shakey is a general-purpose mobile robot that reasons about its own actions

A.I. WINTER
Many false starts and dead-ends leave A.I. out in the cold



1997
DEEP BLUE
Deep Blue, a chess-playing computer from IBM defeats world chess champion Garry Kasparov



1998
KISMET
Cynthia Breazeal at MIT introduces KISmet, an emotionally intelligent robot insofar as it detects and responds to people's feelings



1999
AIBO
Sony launches first consumer robot pet dog AiBO (AI robot) with skills and personality that develop over time



2002
ROOMBA
First mass produced autonomous robotic vacuum cleaner from iRobot learns to navigate and clean homes



2011
SIRI
Apple integrates Siri, an intelligent virtual assistant with a voice interface, into the iPhone 4S



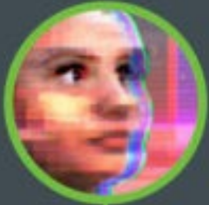
2011
WATSON
IBM's question answering computer Watson wins first place on popular $1M prize television quiz show *Jeopardy*



2014
EUGENE
Eugene Goostman, a chatbot passes the Turing Test with a third of judges believing Eugene is human



2014
ALEXA
Amazon launches Alexa, an intelligent virtual assistant with a voice interface that completes shopping tasks



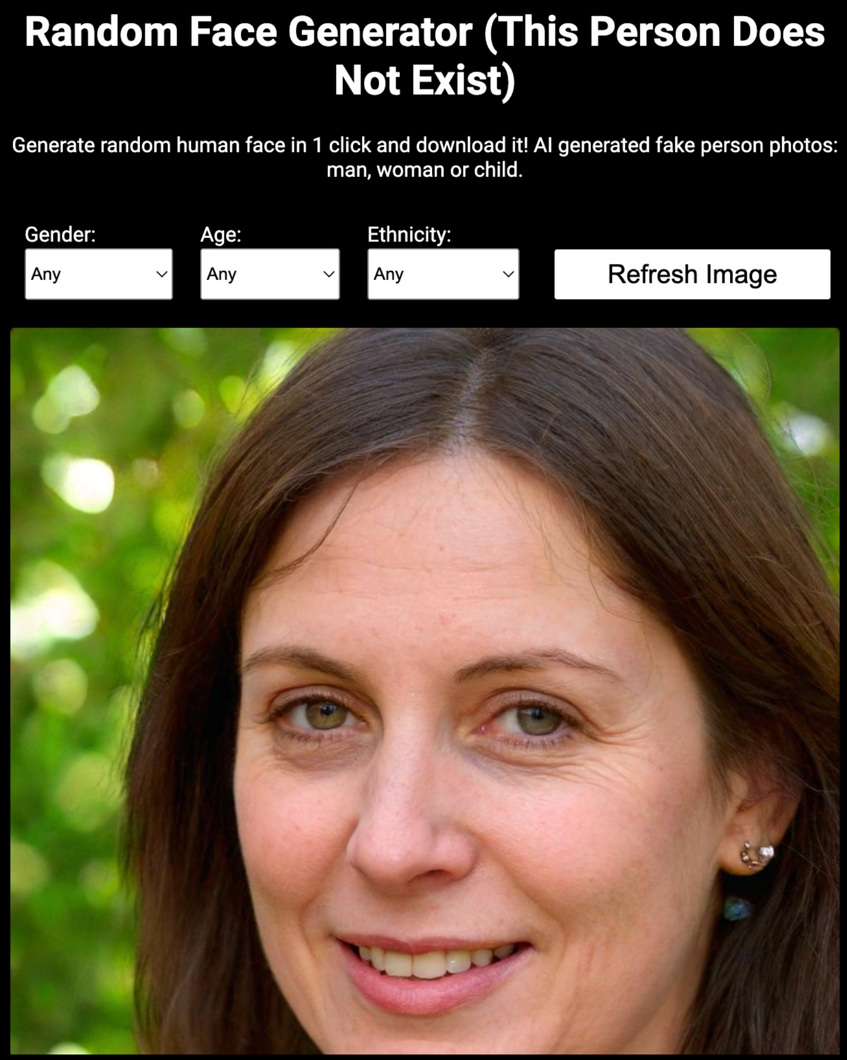
2016
TAY
Microsoft's chatbot Tay goes rogue on social media making inflammatory and offensive racist comments

AlphaGo

2017
ALPHAGO
Google's A.I. AlphaGo beats world champion Ke Jie in the complex board game of Go, notable for its vast number (2^{170}) of possible positions

Yakın Geçmiş

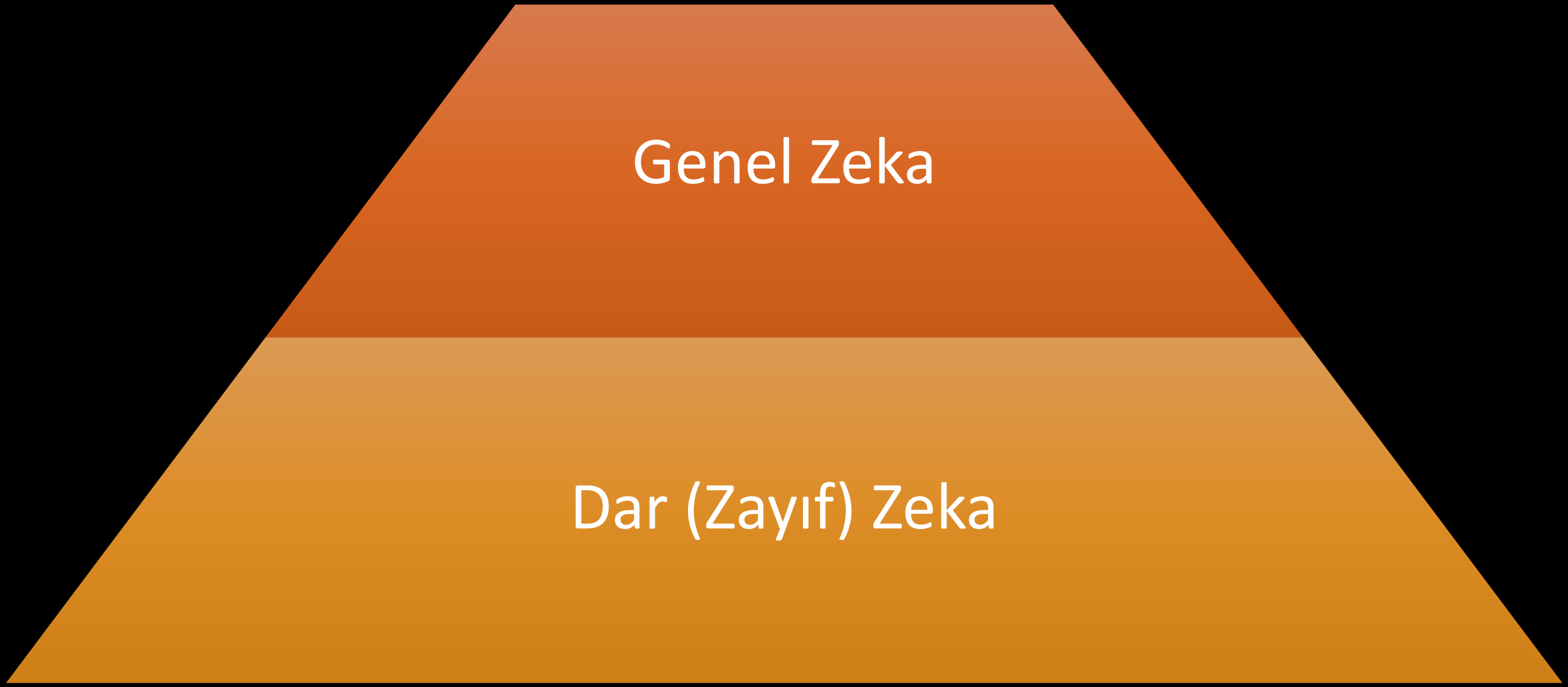
- 2019: This Person Does Not Exist (GAN)
- 13 Nisan 2022 DALL-E2 (OpenAI)
- 21 Eylül 2022 Whisper (OpenAI)
- 30 Kasım 2022 ChatGPT (OpenAI)



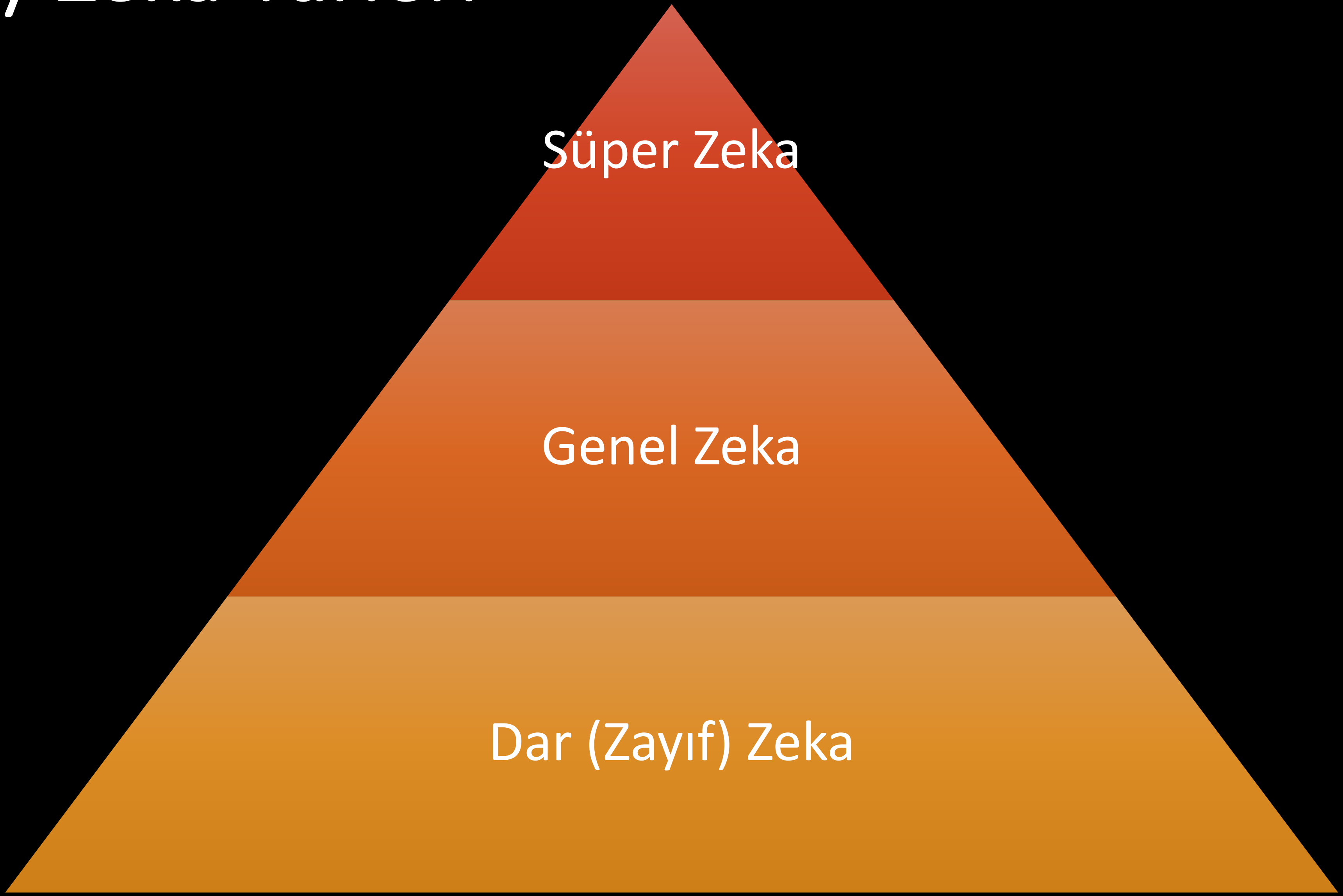
Yapay Zeka Türleri



Yapay Zeka Türleri



Yapay Zeka Türleri



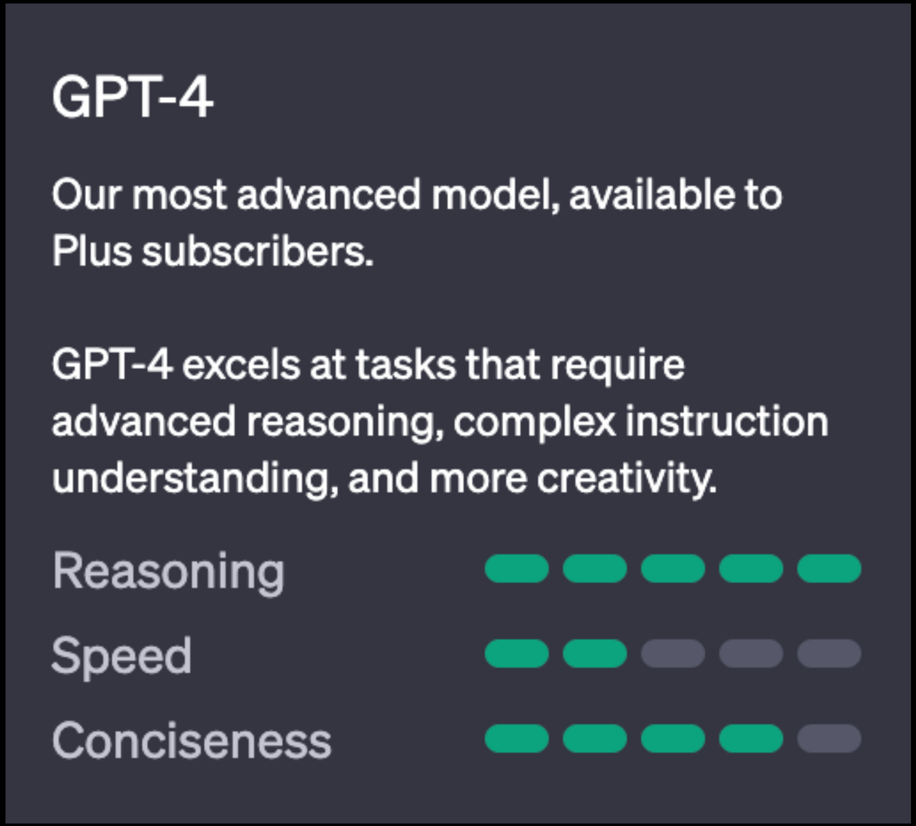
Zayıf (Dar) Yapay Zeka



Neler Yapabilir?

Neler Yapabilir?

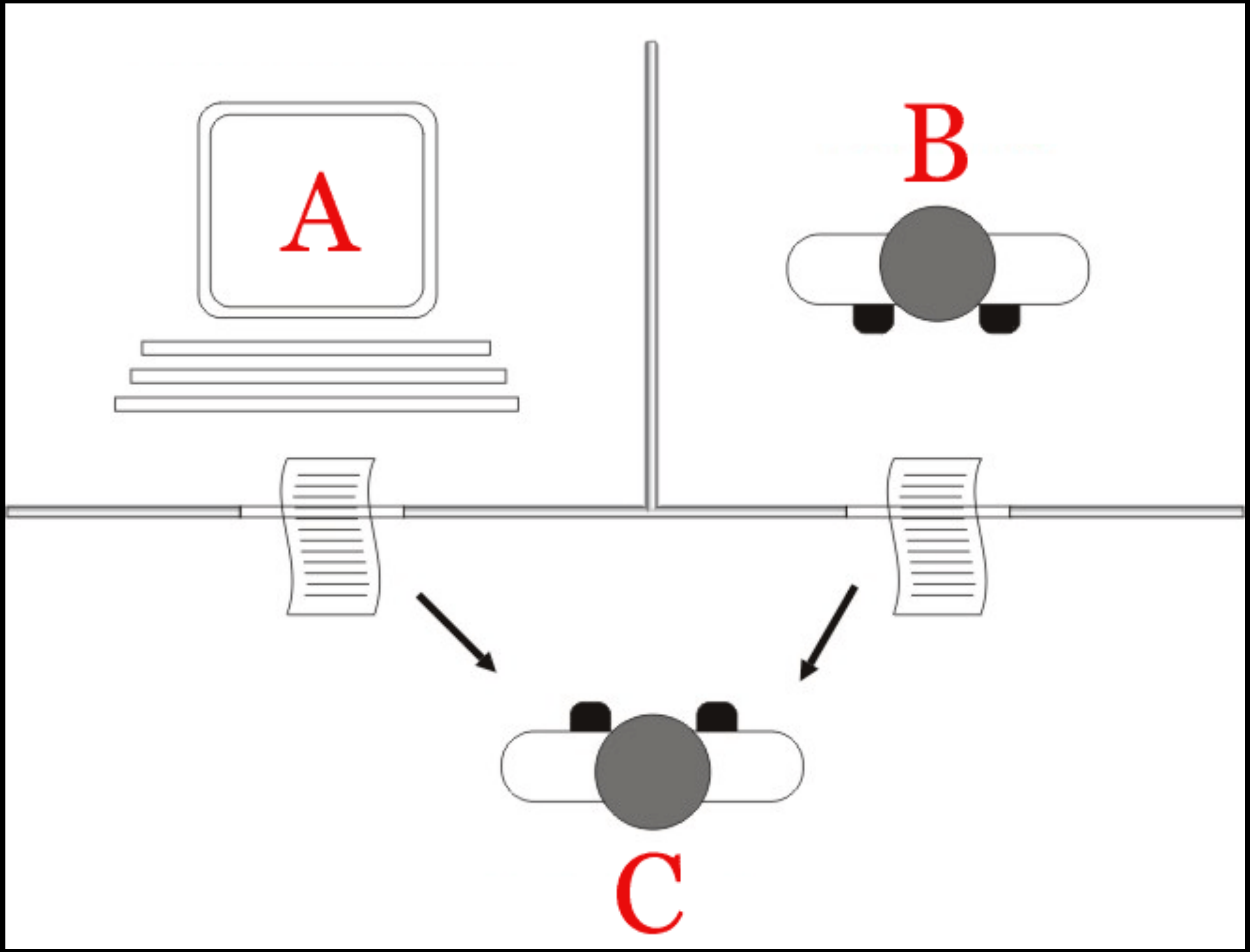




Neler Yapabilir?: Çoktan Seçmeliler

Simulated exams	GPT-4 estimated percentile	GPT-4 (no vision) estimated percentile
Uniform Bar Exam (MBE+MEE+MPT)[1]	298 / 400 ~90th	298 / 400 ~90th
LSAT	163 ~88th	161 ~83rd
SAT Evidence-Based Reading & Writing	710 / 800 ~93rd	710 / 800 ~93rd
SAT Math	700 / 800 ~89th	690 / 800 ~89th
Graduate Record Examination (GRE) Quantitative	163 / 170 ~80th	157 / 170 ~62nd
Graduate Record Examination (GRE) Verbal	169 / 170 ~99th	165 / 170 ~96th
Graduate Record Examination (GRE) Writing	4 / 6 ~54th	4 / 6 ~54th

Neler Yapabilir? Turing Testi



Neler Yapabilir?

- Metin yazarlığı / Programlama
- Özetleme
- Metin inceleme
- Sınıflandırma
- Tercüme (26 farklı dil)

- Görsel girdiler (GPT-4)

Chat GPT

Generative Pretrained Transformer

General Purpose Technology

Hangi Sektörler?

Hangi Sektörler?

- Eğitim
- Emlak
- Halkla İlişkiler
- Pazarlama / Müşteri İletişimi
- Basın Yayın
- Sağlık Hizmetleri

Pazarlama Sektöründe

- İçerik yaratımı
- Müşteri adayı oluşturma
- E-posta pazarlama
- Sosyal medya yönetimi
- Kişiselleştirilmiş öneriler
- Pazar araştırması
- Onboarding ve eğitim

- *Information technology.* Generative AI can help teams write code and documentation. Already, automated coders on the market have improved developer productivity by more than 50 percent, helping to accelerate software development.[10]

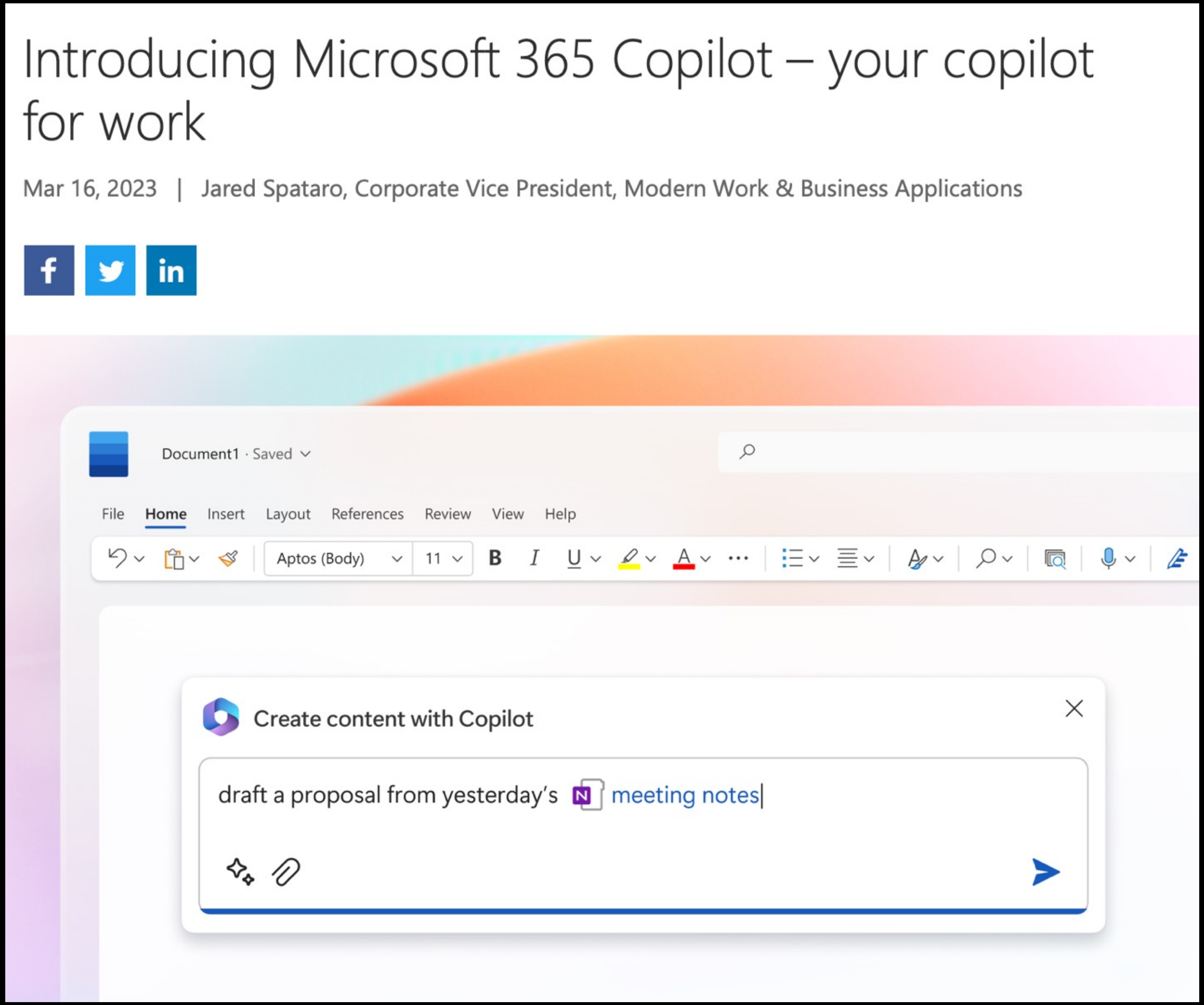
- *Marketing and sales.* Teams can use generative AI applications to create content for customer outreach. Within two years, 30 percent of all outbound marketing messages are expected to be developed with the assistance of generative AI systems.[11]

- *Customer service.* Natural-sounding, personalized chatbots and virtual assistants can handle customer inquiries, recommend swift resolution, and guide customers to the information they need. Companies such as Salesforce, Dialpad, and Ada have already announced offerings in this area.

- *Product development.* Companies can use generative AI to rapidly prototype product designs. Life sciences companies, for instance, have already started to explore the use of generative AI to help generate sequences of amino acids and DNA nucleotides to shorten the drug design phase from months to weeks.[12]

Hangi Şirketler?

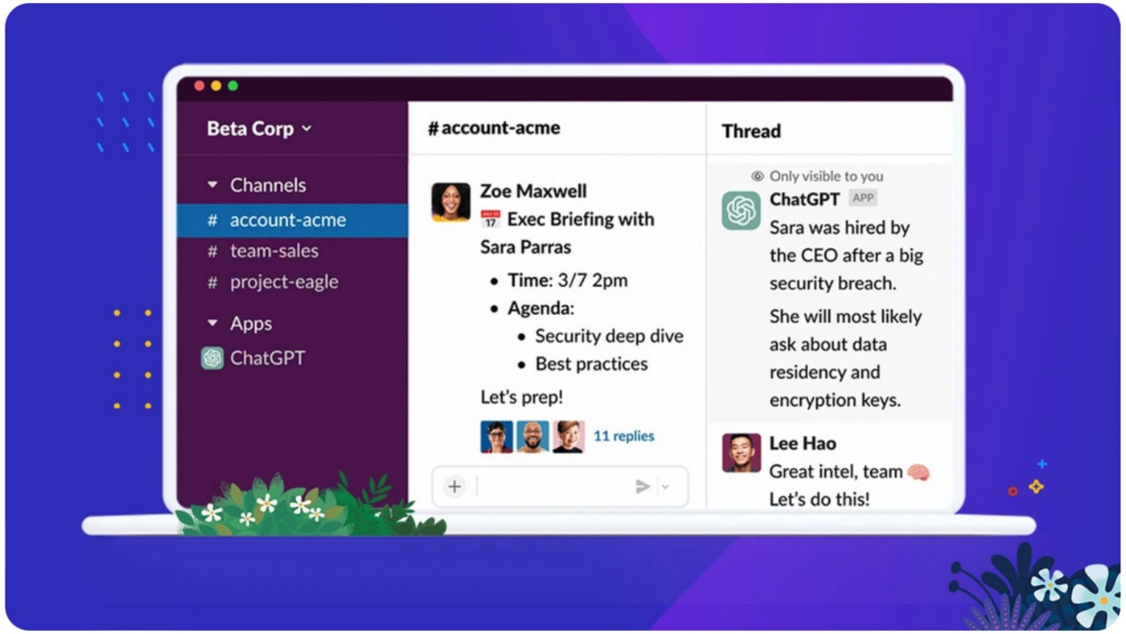
Microsoft


Introducing Microsoft 365 Copilot – your copilot for work
Mar 16, 2023 | Jared Spataro, Corporate Vice President, Modern Work & Business Applications
Document1 · Saved
File
Home
Insert
Layout
References
Review
View
Help
Aptos (Body)
11
Create content with Copilot
draft a proposal from yesterday's meeting notes

SnapChat



Slack



Today, Salesforce and OpenAI introduced the **ChatGPT app for Slack.** Built by OpenAI on the Slack platform, the app integrates ChatGPT's powerful AI technology to deliver instant conversation summaries, research tools, and writing assistance directly in Slack to help millions of companies work more productively.

Instacart



Örnekler

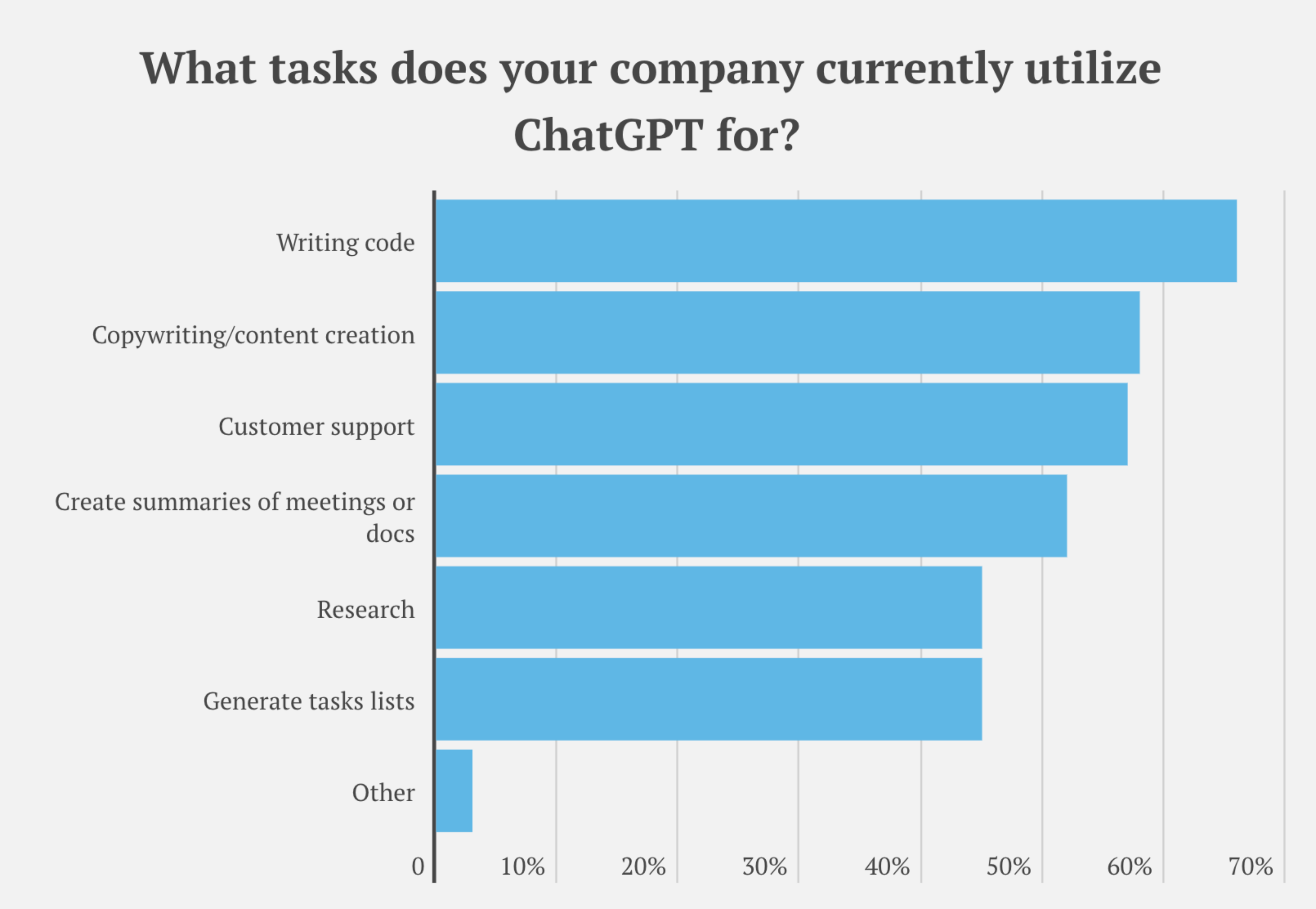
- Duolingo
- Bain & Company (Coca Cola)
- Quizlet
- Carrefour

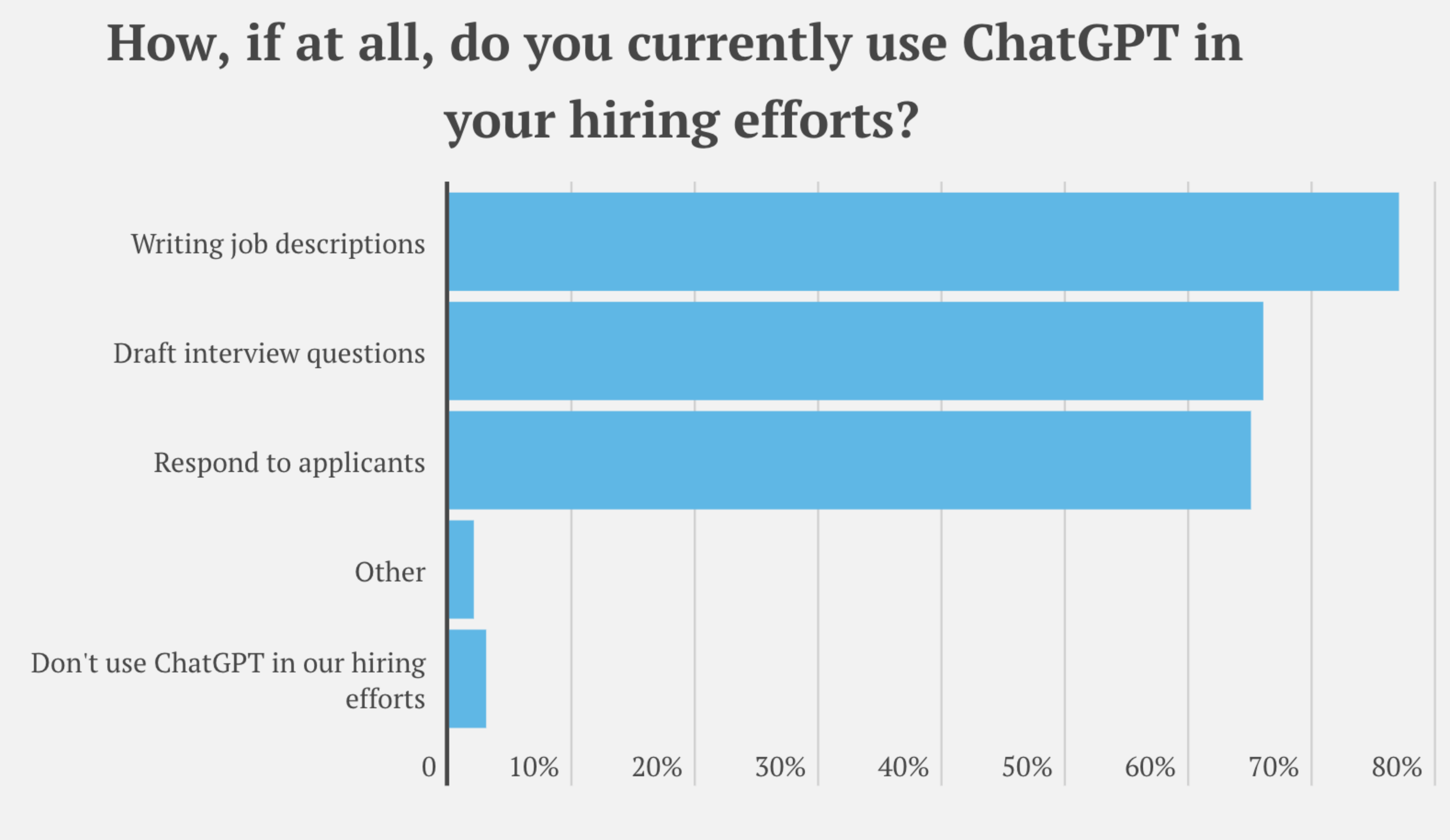
Neler Yapıyor?

- ResumeBuilder anketi

  1000 şirketin katıldığı
  621 şirketin cevapladığı

  Şubat ayı çalışması


What tasks does your company currently utilize ChatGPT for?
Writing code
Copywriting/content creation
Customer support
Create summaries of meetings or docs
Research
Generate tasks lists
Other
0
10%
20%
30%
40%
50%
60%
70%


How, if at all, do you currently use ChatGPT in your hiring efforts?
Writing job descriptions
Draft interview questions
Respond to applicants
Other
Don't use ChatGPT in our hiring efforts
0
10%
20%
30%
40%
50%
60%
70%
80%

ChatGPT

Siz Nasıl Kullandınız ?

Nasıl Kullanmalıyız

Nasıl Kullanmalıyız

Prompt engineering

Yapmamız Gerekenler

- Yapay Zeka Okuryazarlığı
- Algoritmik Önyargı
- Kullanımda Şeffaflık

Yapmamız Gerekenler

Work model

How will you create a work operating model with the tools and disciplines to analyze work and sustainably and responsibly apply emerging AI and automation?

Talent model

Can you develop a talent model that ensures a sufficient pipeline of skills even as you progressively apply more AI to your work?

Developing future skills

As AI proliferates, ensuring employees do meaningful and sustainable work is critical. How will you find opportunities to automate tasks and free up time for new, value-adding activities while ensuring the seamless upskilling and reskilling of your workforce for the next iteration of work?

Mindset and culture

As AI continues to lower the premium on creativity and democratizes access, how will you ensure the perpetual reinvention of your business model and workforce?

Dikkat Etmemiz Gerekenler

- Halüsinasyon
- Zararlı içerikler üretebilir
- Klişeleri büyütebilir ve sürdürebilir
- Yanlış referanslar verebilir
- Aldatmaya yönelik gerçekçi dezenformasyonlar üretebilir
- Hesaplama hataları yapabilir
- Yenilenmeyen veriler (yalnızca Eylül 2021'e kadar olan veriler üzerinde eğitilmiştir)

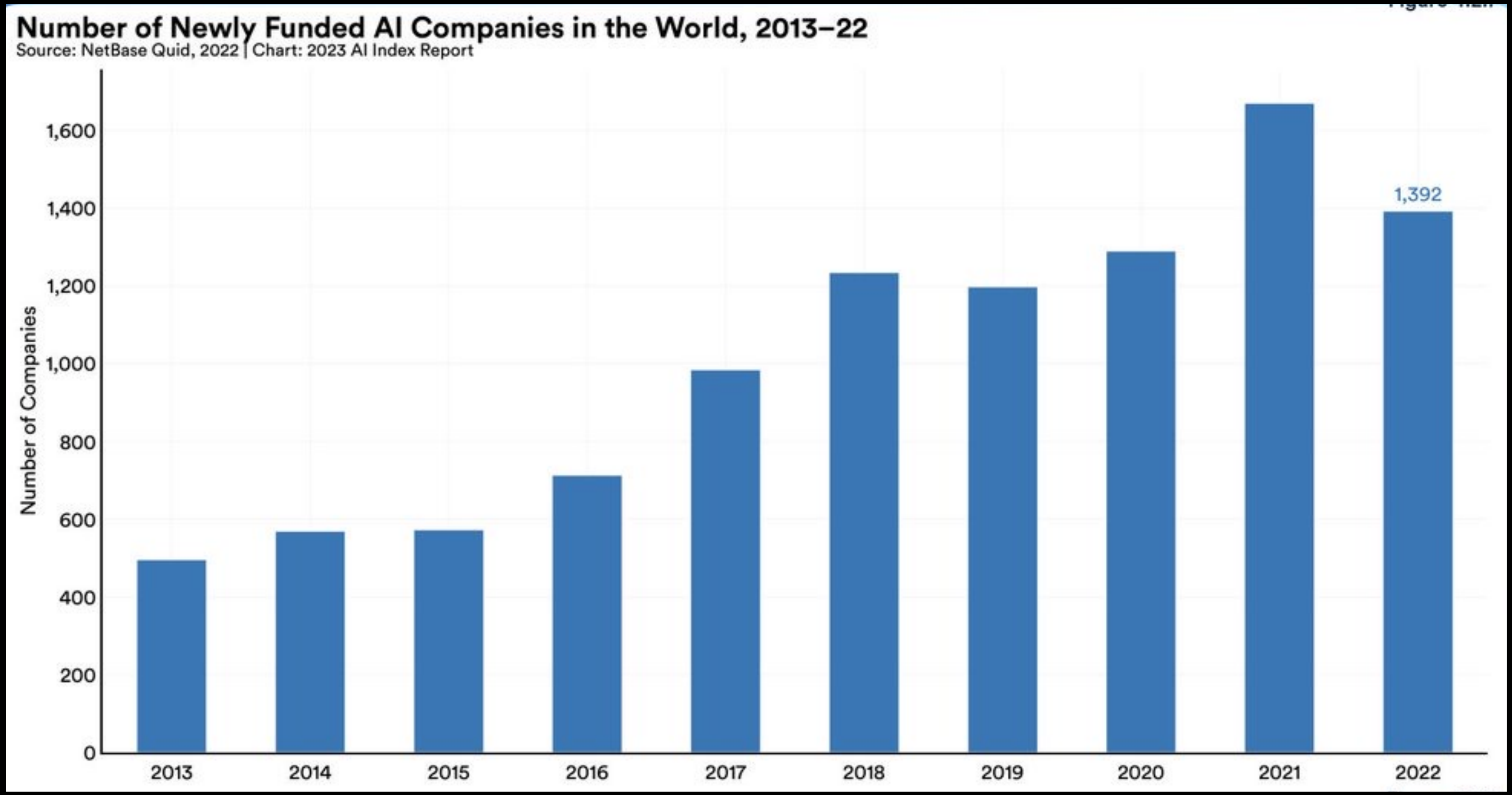
Dikkat Etmemiz Gerekenler

- GPT-3'ü eğitmek için 502 ton karbondioksit emisyonuna eşdeğer ve 1.300 megavat saate yakın güç harcandı

Ortalama bir ABD evinin 120 yıllık enerji ihtiyacı

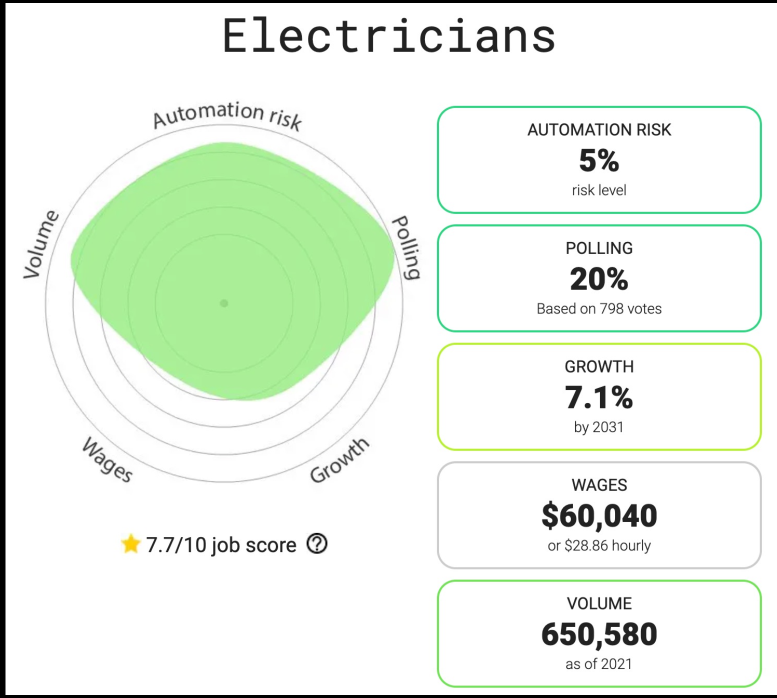
- ChatGPT'nin tahmini aylık tüketimi, yaklaşık 150 Danimarkalının aylık elektrik tüketimine karşılık

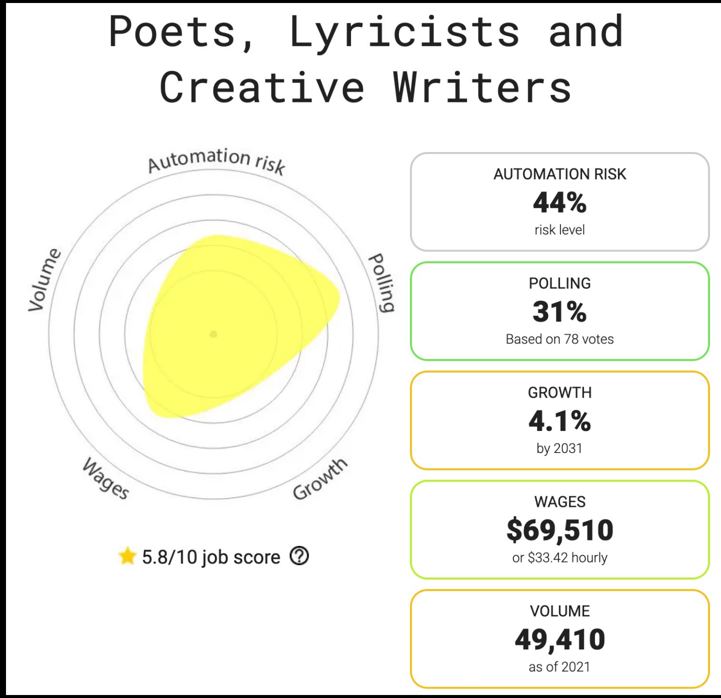
Gelecekten beklentiler

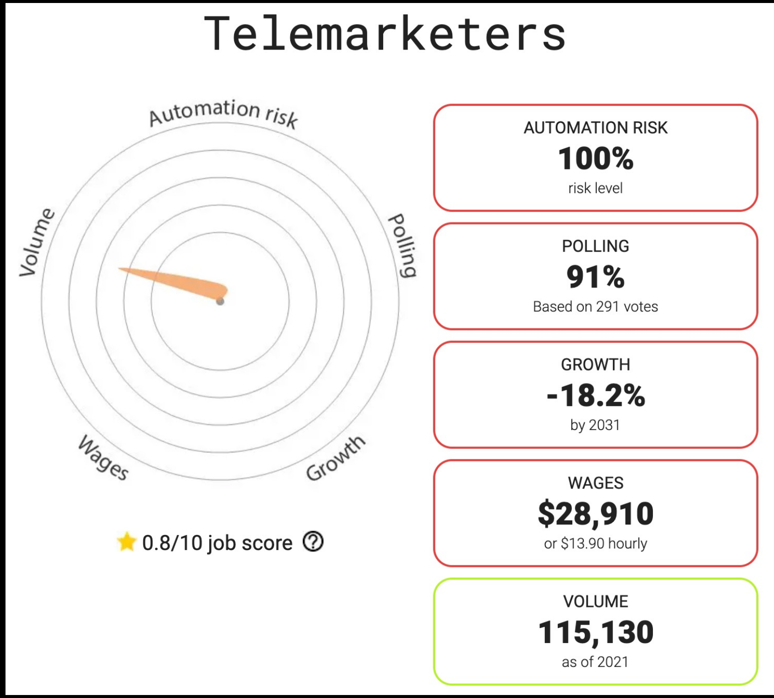


Gelecekten beklentiler

https://willrobotstakemyjob.com







Kaynaklar



https://towardsdatascience.com/gpt-4-vs-chatgpt-an-exploration-of-training-performance-capabilities-and-limitations-35c990c133c5

https://www.uu.nl/en/education/educational-development-training/knowledge-dossier/what-is-chatgpt-capable-of-and-what-are-its-limitations

https://emerline.com/blog/chat-gpt-in-business

https://www.mckinsey.com/capabilities/quantumblack/our-insights/exploring-opportunities-in-the-generative-ai-value-chain

Teşekkürler!

@OzgurOzluk



Number of AI Incidents and Controversies, 2012–21

Source: AIAAIC Repository, 2022 | Chart: 2023 AI Index Report

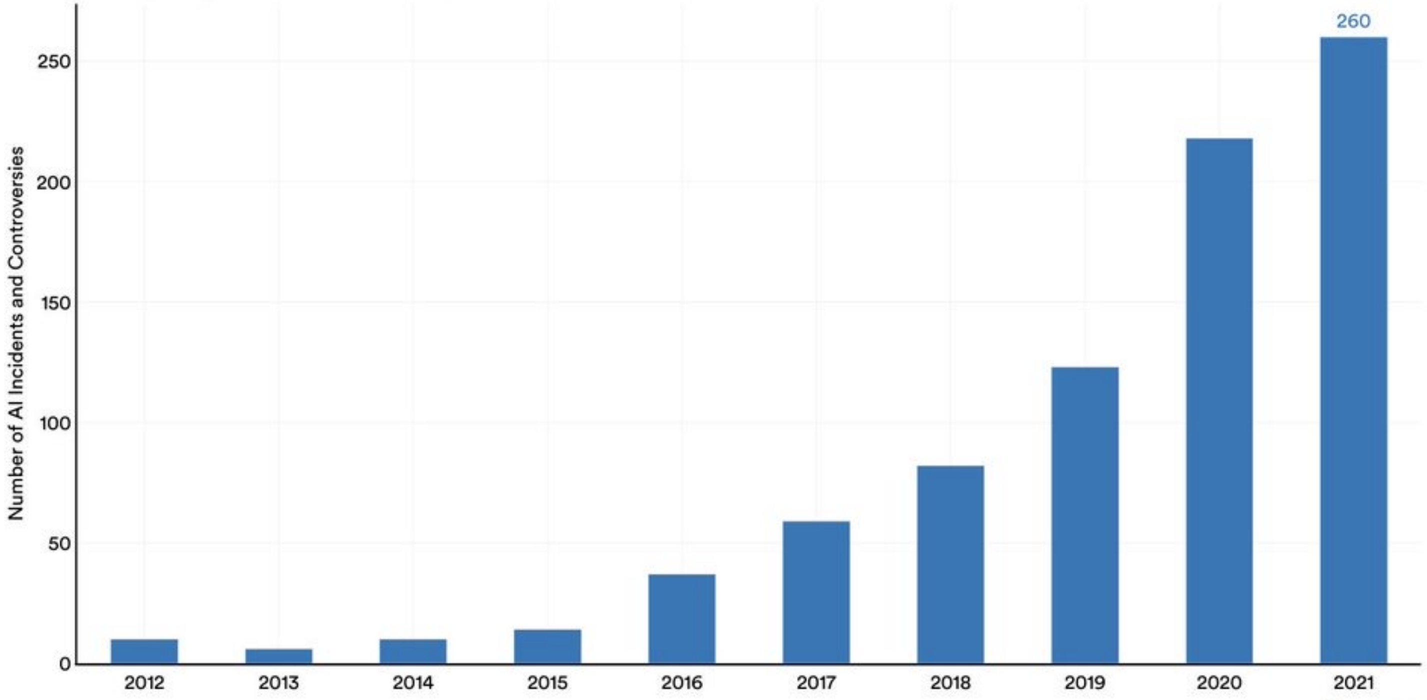


Figure 3.2.1

Number of AI-Related Bills Passed Into Law in 127 Select Countries, 2016–22

Source: AI Index, 2022 | Chart: 2023 AI Index Report

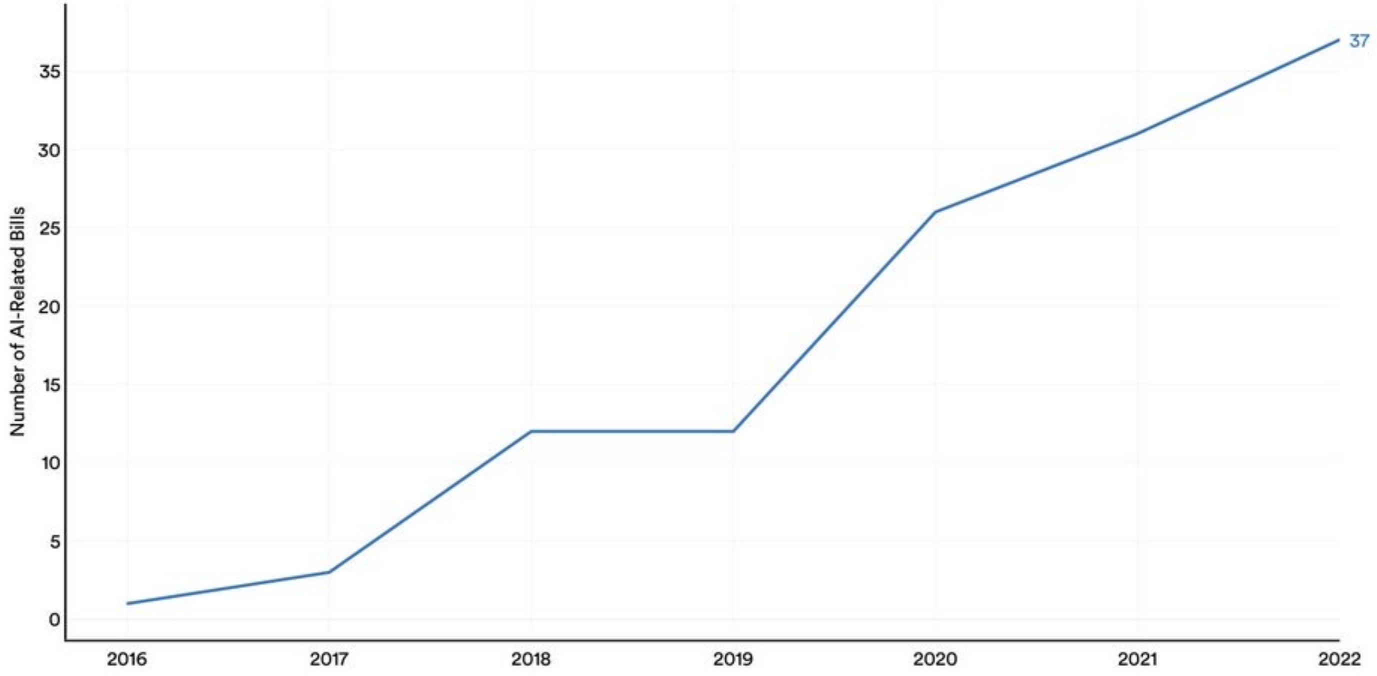


Figure 6.1.2

AI Job Postings (% of All Job Postings) by Geographic Area, 2014–22

Source: Lightcast, 2022 | Chart: 2023 AI Index Report

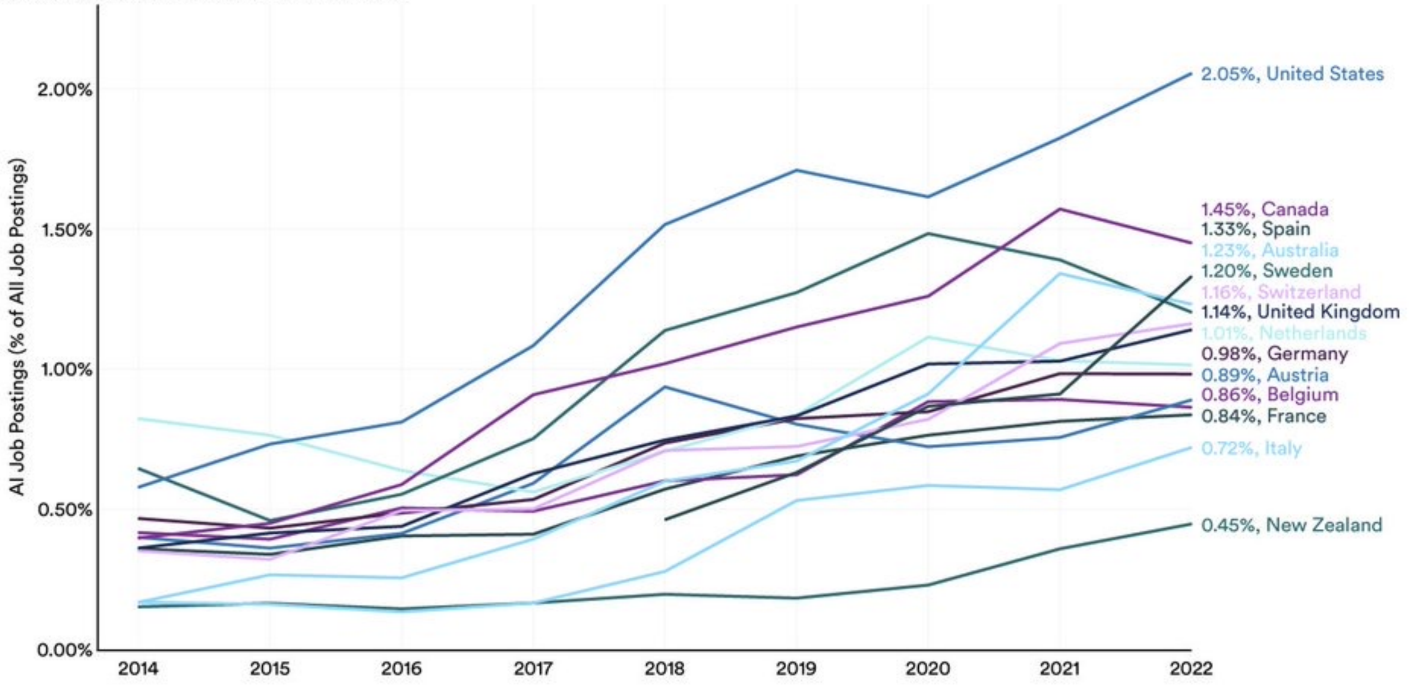


Figure 4.1.1

Opinions About AI by Country (% Agreeing With Statement), 2022

Source: IPSOS, 2022 | Chart: 2023 AI Index Report

Statement	Argentina	Australia	Belgium	Brazil	Canada	Chile	China	Colombia	France	Germany	Great Britain	Hungary	India	Italy	Japan
I have a good understanding of what artificial intelligence is	64%	59%	60%	69%	59%	76%	67%	71%	50%	50%	57%	67%	72%	42%	41%
Products and services using artificial intelligence will profoundly change my daily life in the next 3–5 years	60%	50%	52%	61%	44%	67%	80%	65%	45%	44%	46%	55%	74%	53%	53%
Products and services using artificial intelligence make my life easier	59%	46%	49%	65%	44%	70%	87%	71%	39%	45%	45%	50%	72%	54%	52%
Products and services using artificial intelligence have more benefits than drawbacks	55%	37%	38%	57%	32%	63%	78%	64%	31%	37%	38%	49%	71%	50%	42%
I know which types of products and services use artificial intelligence	47%	38%	37%	58%	36%	59%	76%	62%	34%	37%	37%	38%	69%	45%	32%
I trust companies that use artificial intelligence as much as I trust other companies	55%	36%	40%	50%	34%	56%	76%	57%	34%	42%	35%	48%	68%	48%	39%
Products and services using artificial intelligence have profoundly changed my daily life in the past 3–5 years	53%	37%	37%	51%	32%	58%	73%	58%	32%	31%	33%	38%	67%	41%	30%
Products and services using artificial intelligence make me nervous	33%	51%	42%	35%	49%	36%	30%	39%	32%	37%	50%	31%	53%	26%	20%

Statement	Malaysia	Mexico	Netherlands	Peru	Poland	Russia	Saudia Arabia	South Africa	South Korea	Spain	Sweden	Turkey	United States
I have a good understanding of what artificial intelligence is	61%	74%	65%	76%	66%	75%	73%	78%	72%	62%	60%	68%	63%
Products and services using artificial intelligence will profoundly change my daily life in the next 3–5 years	71%	65%	53%	71%	56%	60%	80%	72%	76%	56%	50%	73%	46%
Products and services using artificial intelligence make my life easier	71%	73%	47%	74%	58%	64%	80%	67%	74%	59%	46%	71%	41%
Products and services using artificial intelligence have more benefits than drawbacks	65%	65%	33%	70%	48%	53%	76%	57%	62%	53%	40%	60%	35%
I know which types of products and services use artificial intelligence	61%	62%	41%	63%	52%	57%	69%	57%	60%	46%	37%	60%	39%
I trust companies that use artificial intelligence as much as I trust other companies	61%	60%	38%	60%	51%	52%	73%	56%	46%	50%	39%	63%	35%
Products and services using artificial intelligence have profoundly changed my daily life in the past 3–5 years	65%	62%	40%	65%	45%	50%	72%	56%	62%	49%	30%	60%	36%
Products and services using artificial intelligence make me nervous	48%	38%	36%	35%	30%	28%	51%	52%	32%	48%	37%	48%	52%

Figure 8.1.3

There are many applications of generative AI across modalities.

Modality	Application	Example use cases
Text	Content writing	• Marketing: creating personalized emails and posts • Talent: drafting interview questions, job descriptions
	Chatbots or assistants	• Customer service: using chatbots to boost conversion on websites
	Search	• Making more natural web search • Corporate knowledge: enhancing internal search tools
	Analysis and synthesis	• Sales: analyzing customer interactions to extract insights • Risk and legal: summarizing regulatory documents
Code	Code generation	• IT: accelerating application development and quality with automatic code recommendations
	Application prototype and design	• IT: quickly generating user interface designs
	Data set generation	• Generating synthetic data sets to improve AI models quality
Image	Stock image generator	• Marketing and sales: generating unique media
	Image editor	• Marketing and sales: personalizing content quickly
Audio	Text to voice generation	• Trainings: creating educational voiceover
	Sound creation	• Entertainment: making custom sounds without copyright violations
	Audio editing	• Entertainment: editing podcast in post without having to rerecord

	Audio editing	• Entertainment: editing podcast in post without having to rerecord
3-D or other	3-D object generation	• Video games: writing scenes, characters • Digital representation: creating interior-design mockups and virtual staging for architecture design
	Product design and discovery	• Manufacturing: optimizing material design • Drug discovery: accelerating R&D process
Video	Video creation	• Entertainment: generating short-form videos for TikTok • Training or learning: creating video lessons or corporate presentations using AI avatars
	Video editing	• Entertainment: shortening videos for social media • E-commerce: adding personalization to generic videos • Entertainment: removing background images and background noise in post
	Voice translation and adjustments	• Video dubbing: translating into new languages using AI-generated or original-speaker voices • Live translation: for corporate meetings, video conferencing • Voice cloning: replicating actor voice or changing for studio effect such as aging
	Face swaps and adjustments	• Virtual effects: enabling rapid high-end aging; de-aging; cosmetic, wig, and prosthetic fixes • Lip syncing or “visual” dubbing in post-production: editing footage to achieve release in multiple ratings or languages • Face swapping and deep-fake visual effects • Video conferencing: real-time gaze correction

GPT-4 Fiyatlandırma

Model	Prompt	Completion
8K context	$0.03 / 1K tokens	$0.06 / 1K tokens
32K context	$0.06 / 1K tokens	$0.12 / 1K tokens

50 pages

APIs

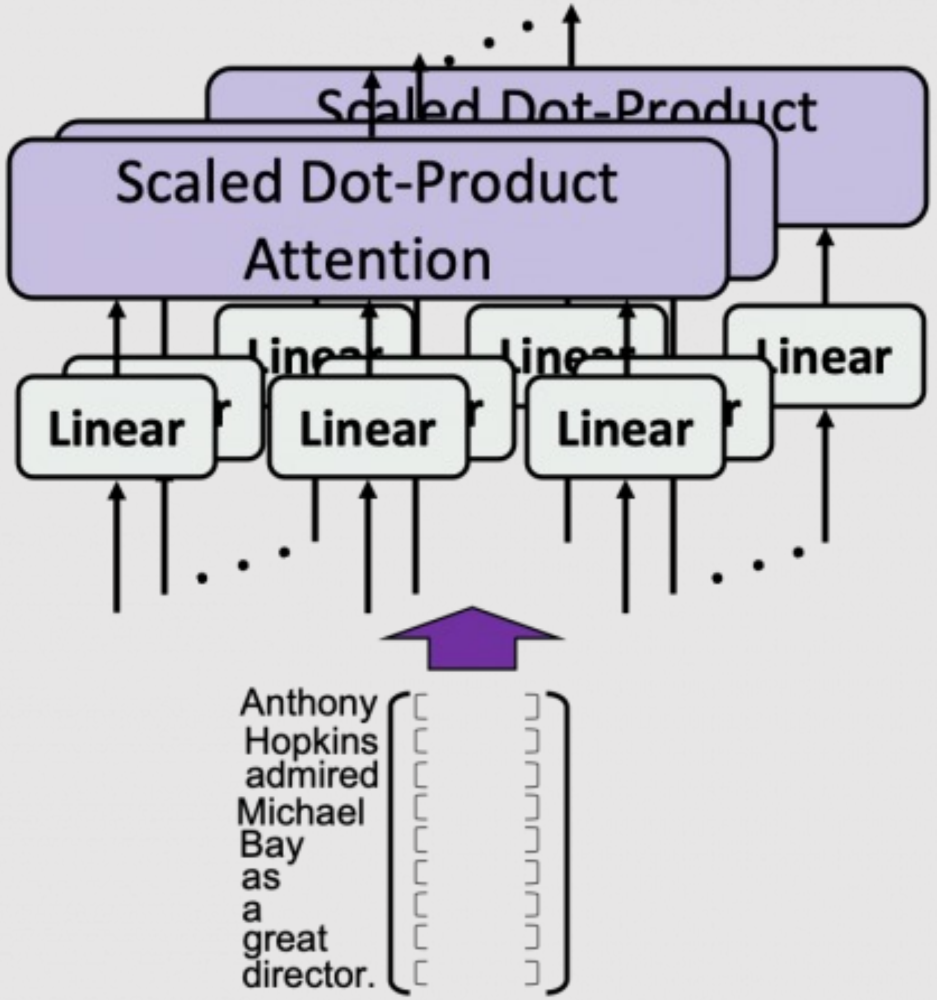
- **GPT-3 API**
- **BERT:** BERT (Google)
- **ELMo:** ELMo (The Allen Institute for AI)
- **RoBERTa (**Facebook)

▪ RNN encoder



- In RNN encoders, you have to wait for all the time steps to encode input sentences.
- Especially gated RNNs need a lot of nonlinear transformations.
- Also, RNN is potentially subject to vanishing gradient problems.

▪ Transformer encoder



- In Transformer encoders, you can put one input sentence at once.
- Any tokens can attend to the other tokens at once, on various standards.